Attorney Docket No: 3429.1

What is claimed is:

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- A method of detecting biomolecules on a microarray comprising synthesizing said biomolecules on a microarray; scanning said microarray with a scanning electron microscope; and detecting said biomolecules on said microarray.
 - 2. A method of claim 1 wherein said biomolecules are nucleotides, oligonucleotides or polynucleotides.
 - 3. A method of claim 1 wherein said microarray is synthesized by light directed oligonucleotide synthesis.
- 10 4. A method of claim 1 wherein said method is used to detect errors in said synthesizing said biomolecules.
 - 5. A method of claim 1 wherein said method is used to detect misalignment of said plurality of biomolecules on said microarray.
 - 6. A method of claim 5 wherein said misalignment is detected with a resolution of less than about 5 micron.
 - 7. A method of claim 5 wherein said misalignment is detected with a resolution of less than about 1 micron.
 - 8. A method of claim 1 wherein said microarray is coated with a layer of metals.
- 9. A method analyzing interactions between a biomolecule target and a biomolecule20 probe on a microarray, comprising

exposing said biomolecule probe on said microarray to a plurality of biomolecule targets under a hybridization condition; scanning said microarray with a scanning electron microscope; and detecting said biomolecule targets binding to said biomolecule probe on said microarray.

- 10. A method of claim 9 wherein said microarray is synthesized by light directed syntheses.
- 11. A method of claim 9 wherein said biomolecules are nucleotides, oligonucleotides or polynucleotides.

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- 12. A method of claim 9 wherein said biomolecule target is labeled with a heavy atom.
- 13. A method of claim 12 wherein said heavy atom is a colloidal gold.

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- 14. A method of claim 13 wherein said heavy atom is detected using a backscattered electron detector.
- 15. A method of testing conditions in a microarray manufacturing process comprising synthesizing biomolecules on a first microarray using a microarray manufacturing process with a first condition; inspecting a pattern on said first microarray with a scanning electron microscope; synthesizing biomolecules on a second microarray using a microarray manufacturing process with a second condition; inspecting a pattern on said second microarray with a scanning electron microscope; comparing said patterns on said first microarray and said second microarrays; and

selecting a condition for said microarray manufacturing process.

- 16. A method of claim 15 wherein said biomolecules are nucleotides, oligonucleotides or polynucleotides.
- 20 17. A method of claim 15 wherein said microarray is synthesized by light directed oligonucleotide synthesis.